1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
MICROCOPY RESOLUTION TEST CHART

Developmental Differences in the Evaluation of Ability and Effort

(Talk given at the 1974 Annual Meeting of the Western Psychological Association at San Francisco.)

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In 1958 Heider identified the most commonly perceived causes of success and failure as ability, effort, task difficulty, luck, and opportunity. Weiner and his associates (Weiner, Frieze, Kukla, Reed, Rest, & Rosenbaum, 1971; Weiner, Heckhausen, Meyer, & Cook, 1972) have classified these causal agents as either stable or unstable and as either internal or external. Because ability and effort are both internal, personal characteristics, they often are of more interest to researchers than task difficulty, luck, and opportunity which are external, environmental characteristics. One goal in the study of the causal agents, ability and effort, has been to identify the variables that influence inferences about them.

Both informational cues and individual differences have been shown to affect ability and effort attributions. Cues such as past performance history, social norms, task structure, and time spent at a task can affect these causal ascriptions. For example, Frieze and Weiner (1971) found that failure tends to be attributed to a lack of effort when a short time is spent at a task and that success tends to be attributed to the presence of effort when a long time is spent at a task. Individual differences in causal biases also influence ability and effort judgements. Weiner and Kukla (1970) found that

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subjects high in need for achievement rate themselves as higher in ability and effort than do subjects low in need for achievement after success experiences. In addition, developmental differences produce differing attributions. Recently, Kun, Parsons, & Ruble (1974) found that younger children combine ability and effort information additively when making outcome predictions while older children combine the same information multiplicatively.

Typically investigations of achievement attributions have studied subjects' ability to use elaborate information such as consensus, distinctiveness, and consistency. In such investigations, performances generally are described globally as either successes or failures. However, there may be finer performance cues, even aspects of a single performance which influence ability and effort attributions. This study therefore asked whether there are aspects of a single performance which convey information about another's ability and effort. It also investigated the possibility that the cues inherent in a single performance might be used differently at different ages.

In many achievement tasks, students are expected to complete a number of items within a set amount of time. Two performance cues - number correct and number attempted - seem likely to influence estimates of ability and effort in such situations. Therefore, these two cues were chosen as independent variables. It seemed plausible that younger children would only use one cue rather than two in making attributions. Number correct might be used to estimate ability and

number attempted might be used to estimate effort. It was anticipated that older children would use two informational cues rather than one. The same cues used by younger children might remain primary but consideration could also be given to a second cue. For example, if older children continued to use number correct as the fundamental indicant of ability, given an equal number of problems correct, performance which differed according to the number of problems attempted might be judged differently.

To investigate these hypotheses, males and females from kindergarten, first, third, and fifth grade were tested. N equaled 24 in each grade. They were told that they would be judging the ability and effort of students their own age who had taken a time-limited test containing eight puzzles. Six performance examples were generated by crossing two levels of information concerning the Number of Puzzles Attempted with three levels of information concerning the Percentage of Puzzles Correct. On each performance either four or eight puzzles had been attempted and either 100, 50, or 25% of those attempted were correct. For example, on one of the hypothetical performances four puzzles had been attempted and 50% of those attempted were correct. This example was described to the children as a test in which a student had attempted four puzzles, getting two correct and two incorrect, and in which the student had left the four other puzzles blank.

To avoid memory problems, especially for the younger children, a pictorial representation of each performance was held up as the experimenter verbally described it to the subject. A spinner similar

to the spinners used in children's games served as a response measure. It depicted a seven-point scale that ranged from three green stars representing the very most ability or effort at one end to three red X's representing the very least ability or effort at the other end. Children were trained to use the spinners before the testing began. The six performmances were presented in random order to each subject. Half of the children in each grade made ability attributions for the six performances first and then looked at the performances again and made effort attributions. The other half of the subjects in each grade made their attributions in the reverse order.

The following results were obtained using repeated measures analyses of variance. A within-grade analysis showed that until the fifth grade there were significant F values for Number Correct alone. This was true for both ability and effort evaluations. Thus, although only one cue was used among kindergartners, first and third graders, contrary to my intuition, the same cue--Number Correct--was used for both ability and effort attributions. This means that Number Attempted was not used as an evaluative cue by the younger children.

In contrast, there were significant F values for Number Correct and for Number Attempted among fifth graders. The fifth graders used a more complex schema than the younger children--that is, they used two cues rather than one. However, like the younger children, the rules for making ability and effort judgements were identical. Number Correct remained the primary cue for both ability and effort judgements, but given an equal number of correct puzzles, the more puzzles that

one had attempted, the smarter and harder working one was believed to be. In other words, fifth graders rated the hypothetical student who attempted eight puzzles, getting four correct and four incorrect, as more able and more diligant than the hypothetical student who attempted only four puzzles, getting all four correct. Essentially the fifth graders in this study judged number correct in absolute terms and then gave extra credit for unsuccessful attempts. Perhaps older subjects, say junior high school students, would make more relativistic judgements and weigh number correct in relation to Number Attempted, thereby penalizing errors.

An analysis of variance between grades also was performed to assess age differences in greater detail. There was a significant main effect for Grade and a significant interaction between Grade and Number Attempted for both ability and effort attributions. This effect reflected increasing negativity with age, especially for evaluations of those performances in which only four puzzles had been attempted. For example, kindergartners were the most positive, and the means of all six of their ability and effort attributions were above the neutral point.

Previously Parsons and Ruble (1972) reported similar findings. After either repeated success or repeated failure, younger children are more optimistic than older children when predicting future performance. However, Parsons' and Ruble's study showed that younger children make extremely positive <u>self</u>-evaluations whereas this study demonstrates that this positivity applies to evaluations of <u>others</u> as

well. If the positivity serves as a mechanism for protecting self-esteem, there would be no reason to expect it to extend to evaluations of others. Hence, the data suggest that optimism or positivism may be a general evaluative approach among younger children. It is unclear, however, whether younger children are not cognizant of the range of performance outcomes or whether they ignore them, choosing to make less critical attributions. As in all studies which fail to find maximal cue use, one must be careful not to jump to the conclusion that limited performance equals limited capacity.

I have reported two main age effects, development of multiple cue use and increasing evaluative negativity. If these results are dependent on cognitive maturity, one might expect children with high IQ's to develop these characteristics sooner than children with low IQ's. IQ measures were available for all the subjects. It was interesting to note that within each grade, there were no significant IQ differences. This evidence suggests that the age-related results in this study may be dependent on experiential factors rather than cognitive maturity.

In summary, four main results were found. First, until the fifth grade, only one cue, the number of problems correct, was used to estimate others' ability and effort. In the fifth grade, both cues were used. Number correct remained the primary cue, but given equal numbers of problems correct, ability and effort were ranked more positively if more problems had been attempted. Second, as indicated above, the same evaluative rules were used to judge both ability and effort at each grade level. Third, with increasing age, evaluations of other's

ability and effort became significantly more negative. And fourth, the emergence of more complex cue utilization and greater negativity appears to be due to general experience rather than to cognitive maturity.

In conclusion, I would like to make a few remarks concerning the validity and the implications of my results. It would be presumptuous to suggest that children evaluate all achievement outcomes in the same manner observed in this study. Jones and Welsh (1971) have demonstrated that task structure as well as performance cues can influence ability and effort attributions. Hence, on a different type of test, attributions might be made according to different criteria. For example, in this experiment, partial completion of a puzzle may suggest some degree of ability whereas partial completion of another task, say an arithmetic problem, might only signify failure and a lack of ability.

Nevertheless, if the results presented in this paper reliably describe the development of evaluative schemas in some types of achievement settings, one wonders why the schema changes so late in age. Many studies have demonstrated that children as young as six years of age are capable of using more than one evaluative cue (Costanzo, Coie, Grumet & Farnhill, 1973; Hebble, 1971; Kempler, 1971). In this study, the prolonged reliance on only one cue, Number Correct, may correspond to a similar tendency among teachers. Perhaps teachers tend to mark correct answers with a check and wrong answers with an X when appraising younger children. But in later grades, as tasks become more complex, more credit may be given for partial attempts.

Whatever the cause, it is interesting that fifth graders use Number Attempted to evaluate peers who have made more errors as higher in ability than peers who have an equal number correct but fewer errors. This seems contrary to the value placed on reflectivity as opposed to impulsivity in the current literature.

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